TITLE OF INVENTION

Same Plane Multiple Thermoelectric Mounting System

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CROSS-REFERENCE TO RELATED APPLICATIONS

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Same Plane Multiple Thermoelectric Mounting System

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STATEMENT REGARDING FEDERALLY SPONORED RESEARCH OR DEVELOPMENT

Not applicable

REFERENCE TO A MICROFICHE APPENDIX

Not applicable

BACKGROUND OF THE INVENTION

Thermoelectric generators 136/200, 208 Plural junction subclass 205

BRIEF SUMMARY OF THE INVENTION

A mounting apparatus enabling multiple thermoelectric module configurations in the same plane to be assembled in parallel by removing the need to sort or match mechanical tolerances of the individual elements of the resultant stack of components. This system also includes heating and cooling chambers with mating self sealing connectors that are articulated in three planes so to be self aligning and remove the need for sorting, matching or lapping of individual elements that occupy the same mechanical plane of reference. The preferred embodiment of this invention enables any number of elements of the electricity generator to be mass assembled by reducing external heating and cooling fluidic connections as each element has self aligning fluidic input and output ports to adjacent modules of the same stack. This embodiment reduces physical connections, allows for mechanical thermal expansion and contraction in three axis while maintaining compression equally on all members of the parallel in plane stack of thermoelectric modules. This embodiment removes mechanical tolerance stack-up constraints between any element of the multiple in plane elements.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Figure 1. Thermoelectrics mounted in same plane

Figure 1. depicts a view of the multiple thermoelectric modules mounted in the same plane sandwiched between two opposing cold fluidic blocks under spring compression with the heating fluidic block in the center.

Figure 2. Thermoelectrics mounted in same plane with cut-away view

Figure 2. depicts a cut-away view of the multiple thermoelectric modules mounted in the same plane sandwiched between two opposing cold fluidic blocks under spring compression with the heating fluidic block in the center.

DETAILED DESCRIPTION OF THE INVENTION

This application pertains to removing the need to sort individual components that could consist of multiple elements configured in the same plane as a single system. The inherent design allows for the separation of air in the heating and cooling fluidic paths by feeding input fluids from the lowest point of the invention to the highest point of discharge of the invention. Fluid paths are mounted with a pronounced elevation of all exit paths from each element of the heating or cooling blocks. The required elevation is dependant on fluid velocity through the heating and cooling blocks. A base elevation of 15 degrees to 45 degrees from horizontal is the preferred configuration for fluid paths below one inch in diameter.

Refer to Figure 1 for the following description. Multiple fluids of different temperatures for circulating to and from external storage tanks or reservoirs cycle through opposing blocks of different fluid temperatures generate electricity within the thermoelectric modules. Cold blocks numbers 1 and 3, are in spring compression around hot block number 7. Electricity is generated in thermoelectric modules number 10 and number 11. Cold water enters via number 9 and exits number 12. Hot water enters via number 8 and exits from number 2 to return to a storage reservoir. The temperature difference between the hot and cold generates electricity. By circulating fluid from the low input ports of

number 8 and number 9, air is transported out of the assembly to the exit ports number 2 for hot fluid and number 12 for cold fluid. Each cold block if bifurcated at number 5 which allows for not having to sort any stack element (thermoelectric modules or hot or cold blocks) for thickness dimensions. Cold ports number 4 and number 6 show detents for 0-rings that allow for stack mechanical tolerance build up to be automatically compensated and removed while providing automatic compensation for thermal expansion and contraction. Any number of elements can be added to the stack by mounting the new element to the fluid input port number 6 and output fluid port number 4.

Refer to Figure 2 for the following description. Cold block number 1 is bifurcated in the middle and has a dog leg feature that keeps adjacent blocks connected and applies pressure on the o-ring number 2. This feature eliminates sorting multiple in plane sorting of thermoelectric modules and other stack elements. O-ring number 5 also allows dimensional mechanical differences to be automatically adjusted to and eliminating sorting or lapping procedures. Compression on the total stack is shown in the detail A enlargement. The spring, number 6 is held on to the connecting rod, number 8, under compression, and the spring is held in place by a C-ring, number 7. This embodiment allows all axis expansion, contraction and natural mechanical variance in stack elements in multi-up configurations. This view shows a double opposed two multi-up thermoelectric module configuration. Any number of parallel in plane configurations can be constructed in this manner.